

Agentic AI: Autonomous Intelligence for Complex Goals—A Comprehensive Survey

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Abstract

Agentic AI, an emerging paradigm in artificial intelligence, refers to autonomous systems designed to pursue complex goals with minimal human intervention. Unlike traditional AI, which depends on structured instructions and close oversight, Agentic AI demonstrates adaptability, advanced decision-making capabilities and self-sufficiency, enabling it to operate dynamically in evolving environments. This survey thoroughly explores the foundational concepts, unique characteristics, and core methodologies driving the development of Agentic AI. We examine its current and potential applications across various fields, including healthcare, finance, and adaptive software systems, emphasizing the advantages of deploying agentic systems in real-world scenarios. The paper also addresses the ethical challenges posed by Agentic AI, proposing solutions for goal alignment, resource constraints, and environmental adaptability. We outline a framework for safely and effectively integrating Agentic AI into society, highlighting the need for further research on ethical considerations to ensure beneficial societal impacts. This survey serves as a comprehensive introduction to Agentic AI, guiding researchers, developers, and policymakers in engaging with its transformative potential responsibly and creatively.